

514

PIONEER 10 & 11

6 HR. AVG INTERPLANETARY DATA

73-019A-12C

72-012A-12B

PIONEER 10
72-012A-12B
6 HOUR AVERAGE INTERPLANETARY DATA

THESE DATA SETS CONTAIN 1 TAPE EACH. THE DS TAPE IS 6250 BPI, 9-TRACK,
BINARY WITH ONE FILE OF DATA, WHILE THE DR IS 3480, CREATED ON THE
ALPHA COMPUTER SYSTEM. THE DS AND DR NUMBERS ALONG WITH THIER TIMESPAN
IS AS FOLLOWS:

D#	C#	TIMESPANS
DR-03737	DS-03737	03/06/72-06/30/92 (Pioneer 10)

**** This tape replace the tape that were once restored****

PIONEER 11

6-HR AVERAGED INTERPLANETARY DATA

73-019A-12C

This data set has been restored. There was originally one 9-track, 1600 BPI tape written in Binary. There is one restored tape. The DR tape is a 3480 cartridge and the DS tape is 9-track, 6250 BPI. The tape was created on an IBM 360 computer. The DR and DS numbers along with the corresponding D number and the time span is as follows:

DR#	DS#	DD#	FILES	TIME SPAN
DR03738	DS03738	D58152	1	04/02/73 - 12/31/90

PIONEER 10

PIONEER 11

72-012A-12B

73-019A-12C

6 HOUR AVERAGED INTERPLANETARY DATA

These data sets contain 1 tape each. The tapes are 1600 BPI,
9-track, Binary with one file of data. The tapes were created on
an IBM 360 computer. The D and C numbers with their corresponding
time spans are as follows:

72-012A-12B

D#	C#	TIME SPAN
D-58151	C-22396	03/06/72 - 12/31/90

73-019A-12C

D#	C#	TIME SPAN
D-58152	C-22397	04/02/73 - 12/31/90

The Pioneer 10/11 Cosmic Ray Experiment
of Goddard Space Flight Center/University of New Hampshire

The Goddard/University of New Hampshire cosmic-ray experiments on Pioneers 10 and 11 and the Goddard cosmic-ray experiment on Helios-1 and -2 are essentially identical. A schematic drawing of the detector systems is shown in Figure 1 and their parameters are summarized in Table 1. The High-energy Telescope (HET) is used to determine the helium energy spectrum between 20 and 500 MeV per nucleon and the proton spectrum between 20 and 56 MeV and 120 and 300 MeV. The particle trajectory for the HET is defined by the A and B detectors. Stopping particles in this telescope are identified by the additional requirement that there is no signal from the CIII detector. This stopping particle mode covers the range from 20 to 56 MeV per nucleon for both protons and α -particles. For penetrating α -particles and protons with energies greater than 56 MeV per nucleon, the HET becomes a triple dE/dx device. In this case, the energy is determined by the energy loss measured in the 1 cm CI + CII stack of solid-state detectors and the pulse-heights measured in B and CIII are both required to be in an interval that is consistent with a given particle of this energy. This threefold multiparameter analysis reduces the background level of spurious events to a negligible level. It is estimated that the absolute uncertainty in the α flux is $\sim 12\%$ at 400 MeV and $\sim 7\%$ at energies below 200 MeV. The operation of the LET-I telescope (Fig. 1) is similar to the stopping particle mode of the HET except that the thin 100 μm dE/dx devices (DI and DII; Fig. 1) permit multiparameter measurements to be made from 3.2 to 21.6 MeV per nucleon for protons and helium nuclei. The multiparameter measurements used in this study reduce to a negligible amount any corrections due to the presence of large quantities of radioactive material in the Pioneer 10 and 11 power supplies.

The total radiation damage produced by energetic electrons and protons incident on the Goddard/University of New Hampshire experiment during the passage of Pioneer 10 through the Jovian magnetosphere was sufficiently high that some four electronic failures were induced by radiation damage effects. The most serious of these was the loss of the E detector information from the LET-1 telescope. It was found that the complete 3-21 MeV per nucleon energy range of this detector could be obtained for stopping α -particles by using a two-parameter analysis of DI vs. DII with only a small increase in background ($< 7\%$). The other failures occurred at several points in the data system but in such a manner that either redundant information is available or--in one case--a correction factor (which generally was on the order of 3-5%) could be derived from the available data.

ELECTRONICS

Pulses from each detector are amplified and shaped in a preamp/post-amplifier, and applied to one or more pulse-height discriminators which produce logic pulses of uniform amplitude and width for each input pulse exceeding the threshold. These logical pulses are used to form the many coincidence-anticoincidence conditions corresponding to various particle energies and types. Both single detector rates and coincidence rates are counted in 24-bit binary counters. Sixty-one such rates are monitored in the Pioneer instrument and 83 rates are monitored in Helios. The Pioneer rates are shown in Table 2; Helios rate data includes additional LET-II rates and the 2-8-keV X-ray rates. Certain coincidence conditions may initiate pulse-height analysis of selected events. The pulse amplitudes of three selected detector outputs are digitized by three 10-bit analog-to-digital converters (ADC).

Linear Circuits

The pulse-height analyzer and coincidence system electronics for the Pioneer and Helios missions were accomplished using nearly identical designs. The same building blocks contained in Pioneer were used, with only slight modification, in the Helios systems. Each experiment contained three mechanically- and electrically-separate subsystems, one for each telescope. Since Helios contains two identical LET-II's, this subsystem is exactly double its Pioneer counterpart.

The preamps use an FET input in a conventional cascade configuration. After shaping with single integration and differentiation time constants of 0.6 μ sec, the pulses are differentially coupled to noise-cancelling linear buffers to eliminate common mode noise pickup. CMRR was measured to be \sim 50 db at the frequencies of interest.

Each of the HET, LET-I and LET-II subsystems operates in a similar fashion. Figure 2 shows the HET system. Each noise-cancelling buffer is followed by another buffer to boost the incoming signal to a level suitable for pulse-height discrimination. The nominal low-level signal to be discriminated corresponds to Channel 1 of the PHA, or 5 millivolts. These low-level discriminators are stable with \pm 0.5% total drift from -20°C to +40°C. A lower power version of discriminator is also used where \pm 2% stability is tolerable. Three of eight discriminators in HET are of this variety.

Two linear summing amplifiers are used in HET. The first linearly adds the CI and CII buffered inputs. This sum is presented to the PHA for analysis under the proper conditions, and, hence, must exceed the linearity requirements of the PHA. The second summing amplifier adds the signals A and B with a weighted output from the first summing amplifier

(A + B + 1.8 [CI+CII]). This signal is fed into two discriminators for use in the coincidence logic to separate protons from electrons and to separate $Z \geq 2$ particles from protons.

In the HET system there are 15 basic coincidence equations, none of which has less than 5 terms. Six additional singles rates are produced. These are multiplexed into the 10 rate outputs. Four of the coincidence conditions are used in the PHA control logic. Inputs to these equations are both pulse and level. The pulse inputs are derived from the discriminators while the levels are derived from the data system to control commutation of the rates.

To insure that coincidence timing is not affected by "discriminator walk" when two pulse inputs are coincident, an active delay has been incorporated. Since the B input appears in all multi-pulse equations, it is delayed 1.5 microseconds using a monostable circuit. The remaining 7 discriminators are followed by 3.0 microsecond monostables. The delayed edge of the B monostable is fed to an edge-coupled high-speed gate, whose other "anding" inputs are 3.0 microsecond-wide pulses or levels. This method insures that if all inputs are coincident with 1.5 microseconds, the proper equation timing will be fulfilled.

The coincidence system also selects events for pulse-height analysis. There are four coincidence conditions which can initiate analysis; two contain the term CIII (penetrating particles) in which case BI, (CI+CII) and CIII are analyzed. The other two conditions contain $\overline{\text{CIII}}$ (stopping particles) for which A, B and (CI+CII) are analyzed. Priority selection of event types allows higher priority events to be analyzed and stored in place of lower priority events. The relative priority of the four event types is rotated so that each type has highest priority for one-fourth the time. This emphasizes the occurrence of relatively rare events in the data.

The PHA system contains four delay lines and linear gates, three height-to-time converters, a gated current source and a gated clock. When an acceptable event has occurred, "open" signals are sent to the proper linear gates (B, [CI+CII] and A or CIII). The input signals are delayed 3.5 microseconds to compensate for delays in the coincidence and priority logic matrices.

The HTC is of the Wilkinson discharge type, the usual choice for nuclear spectrometers because of its excellent differential linearity characteristics. The gated constant current source remains on between events and is turned off slightly after opening of the linear gate. This minimizes the effect of noise spikes associated with opening of the linear gate, and improves the low-channel resolution and linearity significantly. The PHA's are able to resolve Channel 1 (5 millivolts) and produce a total differential non-linearity of $\pm 1.5\%$ over the top 99% of full scale (5 volts or Channel 1024). The digitizing clock is 500 kHz, providing a 2-millisecond conversion time for full-scale inputs. The three 1024 channel PHA's used in HET require less than 30 milliwatts of power.

The PHA system outputs three gated pulse trains which are counted in binary counters. Additional tag bits are stored with each three-parameter PHA quantity which identifies the event type, priority, sector ID of spacecraft spin and a CII range indicator to further characterize each event.

The LET-I and -II systems shown in Figures 3 and 4 operate very similarly to HET. The linear buffers, discriminators and coincidence matrix use the same circuits as in HET. LET-I PHA data contains digitized values of the DI, DII and E detector pulses, and tag bits provide sector ID, priority and event type information. A two-level priority system is used, and both event types are allotted equal time as highest priority events. The coincidence rates detected by LET-I and -II are also listed in Table 2.

Data Systems

All rate data is counted in "Mars buas," a custom PMOS LSI chip developed at GSFC. A single chip contains a 24-bit binary counter, a quasi-log compressor to convert the 24-bit binary number to a 5-bit characteristic and a 7-bit mantissa and a 12-bit storage buffer to hold the data for readout. PHA data are also counted and stored in PMOS IC's. The Pioneer and Helios PMOS data systems are quite similar in design. All spacecraft interface, command processing logic, control of the accumulation intervals and formatting of Rate and PHA data into the available telemetry space is accomplished in a spacecraft-unique Interface Data System (IDS) using low-power T²L circuits. Discreet components were used where necessary to comply with spacecraft interface impedances and levels.

The telemetry formatting was designed to keep the rate data cycle time between 3 and 7 minutes for as many bit rates and formats as possible which were most likely to be used during a nominal mission, or not more than one-half of the science telemetry available to each experiment. PHA data is interleaved with rate data and can process up to 3 events per second on available bit rates. PHA telemetry is always equally divided between HET and LET. Because of the wide variation in bit rate (2048/sec to 16/sec) on Pioneer, a complete data cycle for all rates becomes as long as ~ 1.7 hours.

The experiment acquires spin-sectorized data. A sectorized rate synchronizer generates suitable control signals to insure that the sectorized rate accumulators are live for an exact integral number of spacecraft revolutions. The number of revolutions is determined by the bit rate in use and varies from 1 rev/readout to 31 rev/readouts (spin rate \leq 5 RPM), and between 53 rev/readouts to 2231 rev/readouts on Helios (spin rate ~ 60 RPM). Sectors are 45° wide on both spacecraft.

Commandable features include (a) disabling the sector synchronizers in the event of failure and (b) turning on internally-generated test pulses to stimulate the electronics for pre-flight and in-flight checkout.

This hardware is an example of an extremely lightweight, low-power electronic design for severe environmental conditions. The experiment qualified in vibration at 50 g's and was subjected to almost 5×10^5 rads in Jovian radiation belts. It has already been operating in flight for 9 years, and we expect to be able to receive data from Pioneer 10 until the telemetry signal is lost. Weight was a major problem, especially on Pioneer. The experiment weighed 2.2 kg for the sensor systems, the electronics system consisting of the charge-sensitive preamplifiers, shaping amplifiers, thresholds and logic circuitry, priority control system, six 10-bit pulse-height analyzers, an extensive data system and the low-voltage and detector bias dc-dc converters. Power consumption was 2.4 watts. The Pioneer experiment includes more than 8,000 discrete electronic components per system and more than 40,000 transistors--largely in medium- and large-scale integrated circuits.

Experiment performance has been excellent. Figure 5 shows the LET PHA data for the August 1972 event. This is a plot of the average dE/dx value ($[DI + DII]/2$) vs. the E value with a consistency check applied to the DI and DII values. The chemical elements are readily identified, and isotopic separation, even for the Magnesium line, is possible.

TIME PERIOD COVERED

The data for the planetary encounters has been excluded from these tapes. The following time periods were, therefore, excluded from the interplanetary data for the spacecraft/encounter indicated:

Pioneer 10/Jupiter: 11/26/73, 00:00, to 12/16/73, 00:00

Pioneer 11/Jupiter: 11/26/74, 00:00, to 12/10/74, 00:00

Pioneer 11/Saturn: 08/31/79, 00:00, to 09/05/79, 00:00

This data will be supplied on their own tapes complete with similar documentation concerning their content.

The time periods included on these tapes are as follows:

Pioneer 10: 03/06/72, 00:00, to 01/01/81, 00:00

Pioneer 11: 04/02/73, 00:00, to 01/01/81, 00:00

Table 3 lists the particles and their energy range to which the different rates are sensitive.

DATA FORMAT

Time-history of Pioneer Cosmic-ray Telescope data described above is being submitted on 9-track tapes recorded at 1600 BPI. The tape marked PIOEPF contains Pioneer 10 data and the one marked PIOEPG contains Pioneer 11 data.

Each tape contains one file of data. The file consists of a number of frames. A frame covers a period of one month or less and consists of eight Flux Time-history (FTH) records. Data items contained in the FTH records in each frame are described in Table 3. An FTH record contains a count of the number of data items (NBIN) whose time-history is included in the record, a count of the number of averaging intervals (NINT) included in the record, definitions of data items included and time-history data. Table 4 defines the structure of an FTH record in detail. These tapes were generated on an IBM System 360 computer; thus, a word consists of 32 bits, half-word 1 is the high order 16-bit field of the word and half-word 2 the low order half (bits 16-31, with the left-most or MSB numbered 0). Characters are represented in 8-bit EBCDIC byte, real numbers are represented in the IBM single precision floating point format. Length (in words) of an FTH record is given by

200 + (3 + 2 * NBIN) * NINT NBIN <= 5

233 + (3 + 2 * 6) * NINT NBIN = 6

Thus, FTH records have a maximum length of 1812 words (7248 bytes).

Table 1

Summary of the Characteristics of Each
of the Telescopes and Their Component Detectors
(One of Each Carried on Board Pioneer)

<u>TELESCOPE</u>	<u>HET</u>	<u>LET-I</u>	<u>LET-II</u>
Geometrical Factor (cm ² -ster)	.22	.155	.015
Detectors (thickness x area)	A,B: 2.5mmx3cm ² C's: 2.5mmx8.5cm ²	D,I,II: 100μx1cm ² E,F: 2.5mmx3cm ²	S,I: 50μx50mm ² S,II: 2.5mmx50mm ² S,IIA: 2.5mmx50mm ² S,III: 2.5mmx200mm ²

Table 2

<u>RATE</u>	<u>COINCIDENCE</u>	<u>PARTICLE/ENERGY</u> ⁺
*R1	(A ₂ K ₁ +A ₁ CI)BCIII	Protons, Z _{>2} : 20-56 MeV/nuc Electrons: 2-8 MeV
*R2	A ₁ <u>A₂B CIII</u>	Protons: >230 MeV
*	A ₁ B <u>K₂CIII</u>	Z _{>2} : 20-56 MeV/nuc
*R3	A ₂ B CIII	Protons, 56-220 MeV; Alphas, >56 MeV
	A ₂ BK ₂ <u>CI</u>	Alphas: 20-30 MeV/nuc
R4	A ₂ BK ₂ CICII	Alphas: 30-45 MeV/nuc
	A ₁	
R5	A ₂ BK ₂ CICIICIII	Alphas: 45-56 MeV/nuc
	A ₂	
R6	A ₁ <u>A₂BCI</u>	Electrons: 2-4 MeV
	A ₁ <u>A₂BCICII</u>	Electrons: 4-6 MeV
R7	A ₁ <u>A₂BCICIICIII</u>	Electrons: 6-8 MeV
	A ₂ BK ₁ <u>CI</u>	Protons, Alphas: 20-30 MeV/nuc
R8	A ₂ BK ₁ CICII	Protons, Alphas: 30-45 MeV/nuc
	A ₂ BK ₁ CICIICIII	Protons, Alphas: 45-65 MeV/nuc
R9	B	
	CI	
	CII	
	CIII	
R10	DI ₁	
	.	
	.	
	.	
	DI ₈	
*R11	DIDIIF	Protons, Z _{>2} : 3-21 MeV/nuc
*	DIDIISDF	Z _{>2} : 3-21 MeV/nuc
R12	DIDIIE ₁ F	Protons, Z _{>2} : 6-21 MeV/nuc
	DIDIISDE ₃ F	Z _{>2} : 6-21 MeV/nuc
R13	DIDIIE ₂ F	Protons, Z _{>2} : 10-21 MeV/nuc
	DIDIISDE ₄ F	Z _{>2} : 10-21 MeV/nuc

Table 2, Continued:

<u>RATE</u>	<u>COINCIDENCE</u>	<u>PARTICLE/ENERGY</u> ⁺
R14	DI	
	DII	
	E ₁	
	F	
	SI	
	SII	
	SIII	
	SIIA	
R15	SI ₁ SII SIIA SIII	Protons: .15-2.1 MeV
	SI ₂ SII SIIA SIII	Protons: .72-2.1 MeV
	SI ₃ SII SIIA SIII	Protons: 1.2-2.1 MeV
	SI ₄ SII SIIA SIII	Alphas: .6-2.1 MeV/nuc
R16	SI SII ₁ SIIA SIII	Protons: 2.1-21 MeV
	SI SII ₂ SIIA SIII	Protons: 5.7-21 MeV
	SI SII ₃ SIIA SIII	Protons: 15.1-21.2 MeV
	SI SII ₄ SIIA SIII	Alphas: 6-21.2 MeV/nuc
SR1	A ₁ ^A ₂ ^B CI CIII	Electrons: 4-8 MeV
	A ₂ ^{BK} ₁ ^{CIII}	Protons, Z>2: 20-56 MeV/nuc
	DIDIIF	Protons, Z>2: 3-21 MeV/nuc
	DIDIIE ₁ ^F	Protons, Z>2: 6-21 MeV/nuc
SR2	SI ₅ SII SIIA SIII	Protons: .12-2.1 MeV
	SI ₆ SII SIIA SIII	Protons: .52-2.1 MeV
	SI ₇ SII SIIA SIII	Protons: 1.5-2.1 MeV
	SI ₈ SII SIIA SIII	Protons: 1.5-2.1 MeV
	SI SII ₅ SIIA SIII	Electrons: .12-2 MeV
	SI SII ₆ SIIA SIII	Electrons: .40-2 MeV
	SI SII ₇ SIIA SIII	Electrons: .68-2 MeV
	SI SII ₈ SIIA SIII	Electrons: .97-2 MeV

⁺Design goals, actual parameters for the submitted rates are listed in Table 3.

* Designates PHA conditions.

$$K = A+B + 1.8(CI+CII)$$

$$\Sigma D = DI+DII +1.6E$$

Table 3. Data Content of a Frame on PIOEPF and PIOEPG

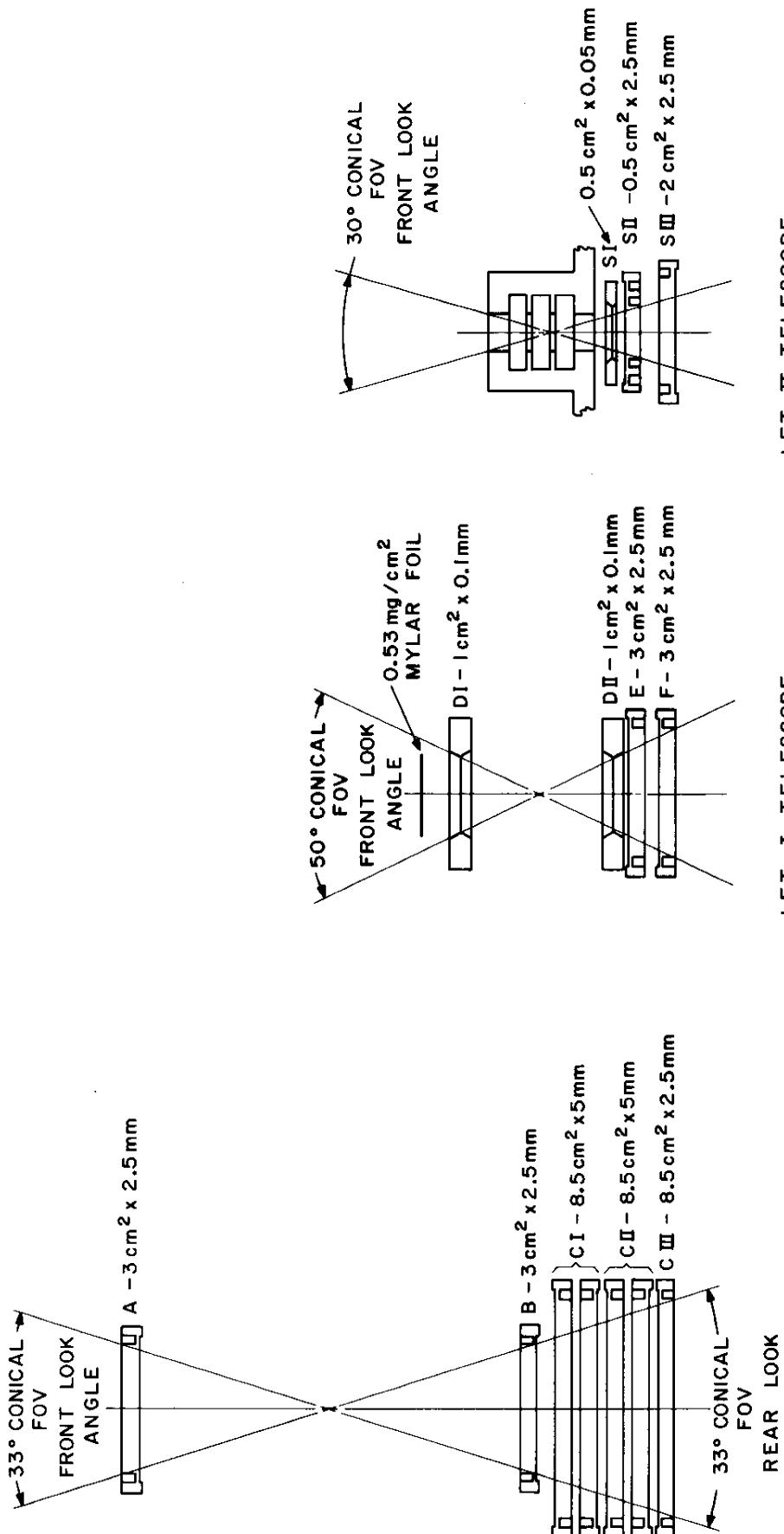
<u>FTH RECORD #</u>	<u>WITHIN A FRAME</u>	<u>DATA ITEM</u>
1		112.0 -400.0 MeV Proton 30.0 - 56.0 MeV Proton 3.44- 5.2 MeV Proton 112.7 -400.0 MeV Alpha 30.0 - 56.0 MeV Alpha
2		10.0 - 21.0 MeV Alpha 3.44- 5.2 MeV Alpha 2.0 - 6.0 MeV Electron R1 2-8 MeV electrons, 20-56 MeV protons R2A >180 (P-10), >220 (P-11) MeV protons, >8 MeV electrons
3	R2B	All Z > 2 ions with a range < 1.5 cm in Si
	R3A	56-180 (P-10)-220 (P-11) MeV protons plus > 56 MeV alphas
	R9A	0.22 MeV threshold on Det. B
	R9B	1.0 MeV threshold on Det. CI
	R9C	1.1 MeV threshold on Det. CII
4	R9D	0.23 MeV threshold on Det. CIII
	R10A	0.13 MeV threshold on Det. DI
	R10B	0.60-33 MeV protons, > 0.39 MeV alphas
	R10C	0.72-20 MeV protons, > 0.42 MeV alphas
	R10D	0.84-14.2 (P-10), 0.82-15.1 (P-11) MeV protons > 0.46 MeV alphas
5	R10E	1.1-8.1 MeV protons, > 0.53 MeV alphas
	R10F	1.60-5.1 (P-10), 1.56-5.1 (P-11) MeV protons, > 0.63 MeV alphas
	R10G	2.29-3.8 (P-10), 2.13-3.8 (P-11) MeV protons, > 0.75 MeV alphas
	R10H	> 0.99 MeV alphas with proton contamination
	R11A	3.2-21 MeV protons and alphas
6	R11B	3.2-21 MeV alphas and heavier ions
	R12A	5.6-21 MeV protons and alphas
	R12B	5.6-21 MeV alphas and heavier ions
	R15A	0.20-2.15 (P-10), 0.20-2.17 (P-11) MeV protons, alpha and ion contamination
	R15B	0.74-2.15 (P-10), 0.72-2.17 (P-11) MeV protons, 0.22-2.05 MeV alphas
7	R15C	1.24-2.15 (P-10), -2.17 (P-11) MeV protons, 0.34-2.05 MeV alphas
	R15D	0.69-2.05 (P-10), 0.66-2.05 (P-11) MeV alphas + ions
	R16A	3.2-20.6 MeV protons, plus some alphas
	R16B	5.7-20.6 MeV protons, plus some alphas
	R16C	14.9-20.6 MeV protons, plus some alphas
8	R16D	6.6-20.6 MeV alphas

Table 4. STRUCTURE OF FLUX TIME-HISTORY RECORD

WORD	HALFWORD	TYPE	DESCRIPTION
1	1	Integer	Number of data items contained in the record (NBIN).
3-35	2	Integer	Number of averaging intervals (NINT) contained in the record.
36-68		character	132-character title identifies satellite and gives the start time of first averaging interval and last averaging interval in the record.
69-101		character	132-character description of first data item.
102-134		character	132-character description of second data item, if NBIN ≥ 2 . Otherwise, not used.
135-167		character	132-character description of third data item, if NBIN ≥ 3 . Otherwise, not used.
168-200		character	132-character description of fourth data item, if NBIN ≥ 4 . Otherwise, not used.
201-			NBIN ≤ 5
201-			NINT Averaging Interval Entries (AIE). The structure of an AIE is shown in Table 5.
201-233		character	132-character description of sixth data item.
234-			NINT Averaging Interval Entries as defined in Table 5.

Table 5. STRUCTURE OF AVERAGING INTERVAL ENTRY

WORD	HALFWORD	TYPE	DESCRIPTION	
1	1	Integer	2-digit year	Start time of averaging interval
	2	Integer	month of year	
2	1	Integer	day of month	Start time of averaging interval
	2	Integer	hour of day	
3	1	Integer	minute of hour	
	2	Integer	second of minute	
4- (3+2*NBIN)		Real	NBIN FLUX entries. Each FLUX entry is two words long. If the second word of the entry is -1.0, data for this item is not available; otherwise the first word is the value of flux and the second word contains the associated statistical error.	



PIONEER F & G DETECTOR COMPLEMENT
COSMIC RAY ENERGY SPECTRA

Figure 1. HET, LET-I and LET-II
Telescope Assemblies.

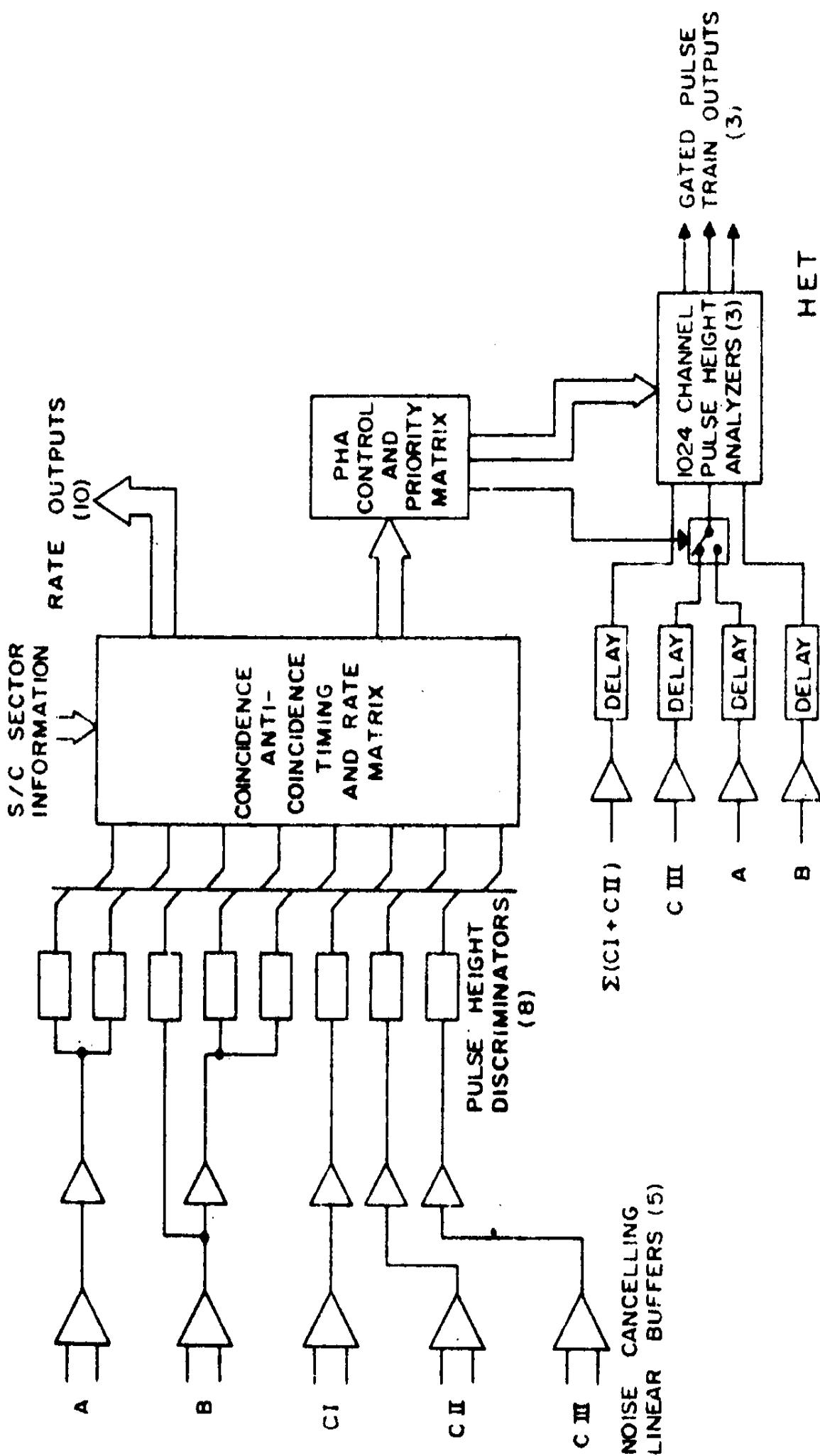
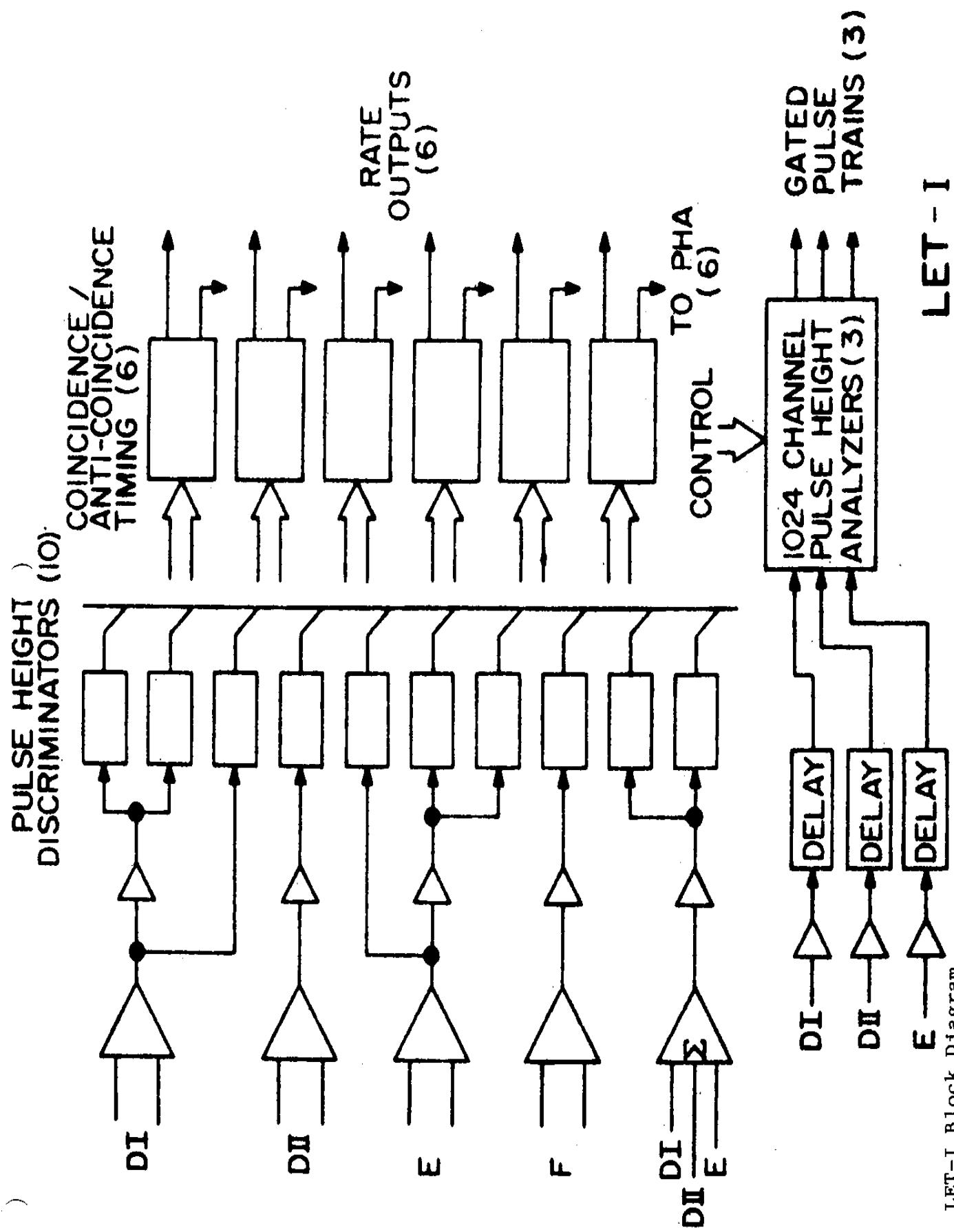


Figure 2. HET Block Diagram.

LET - I

Figure 3. LET-I Block Diagram



LET-II

**NOISE CANCELLING
LINEAR BUFFERS (4)**

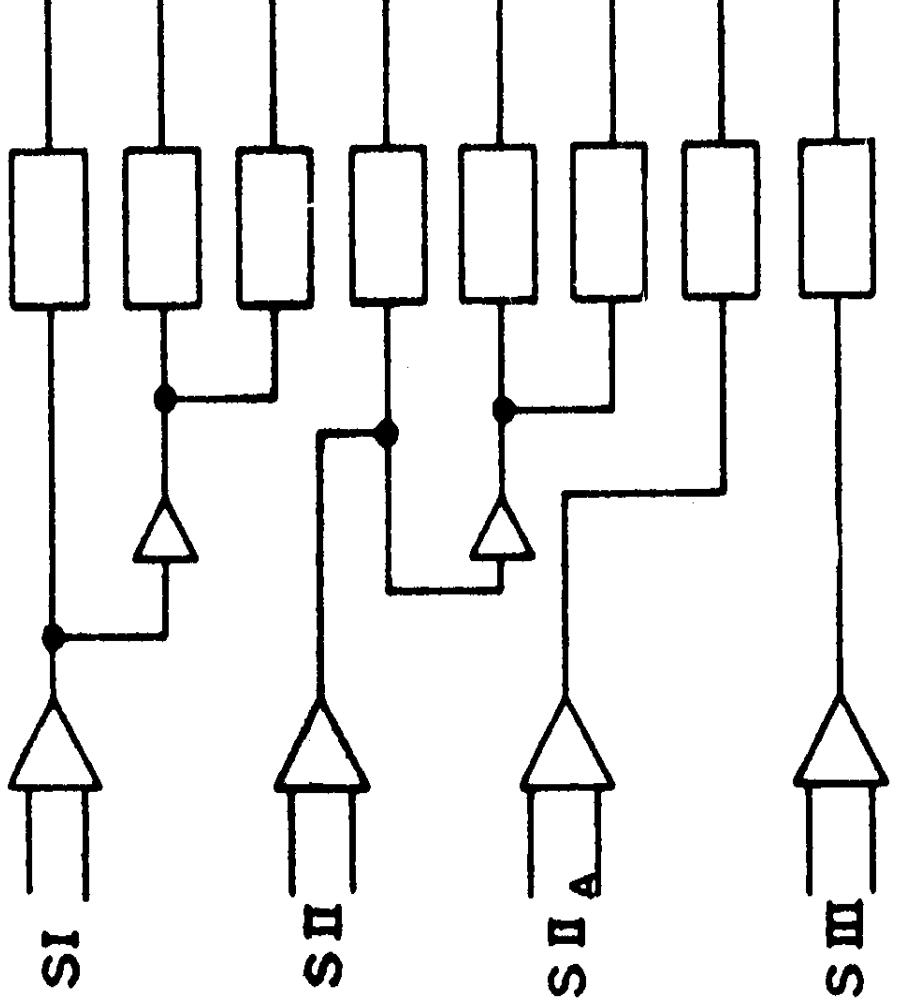
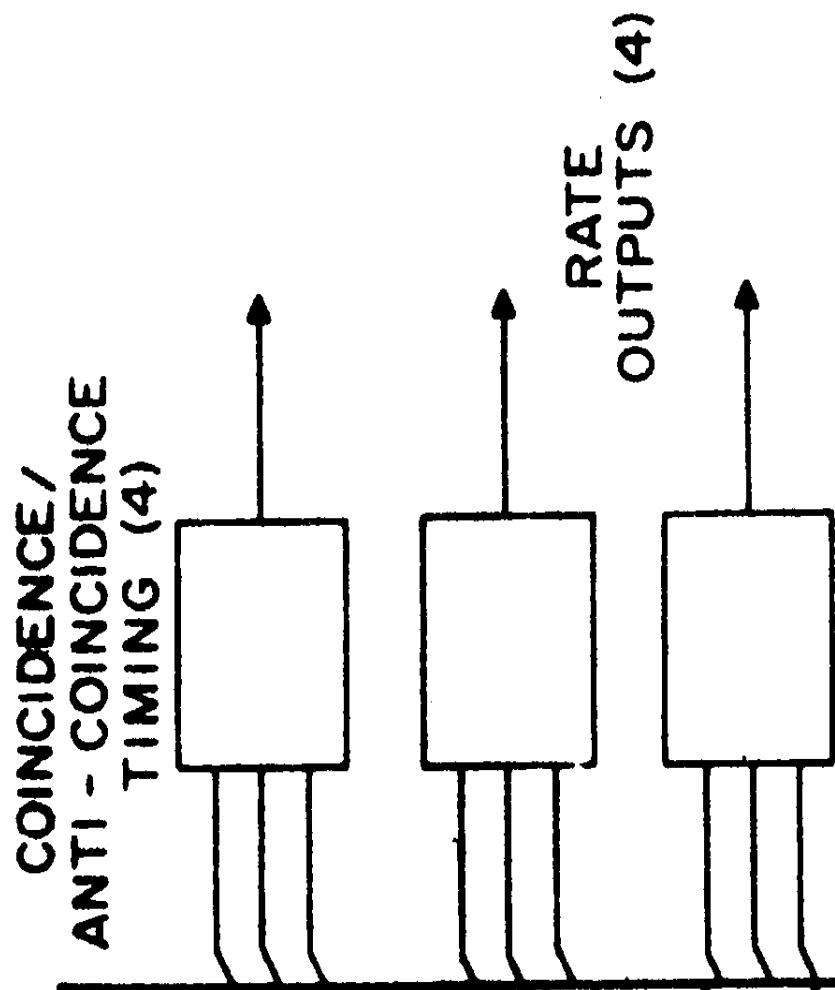


Figure 4. LET-II Block Diagram

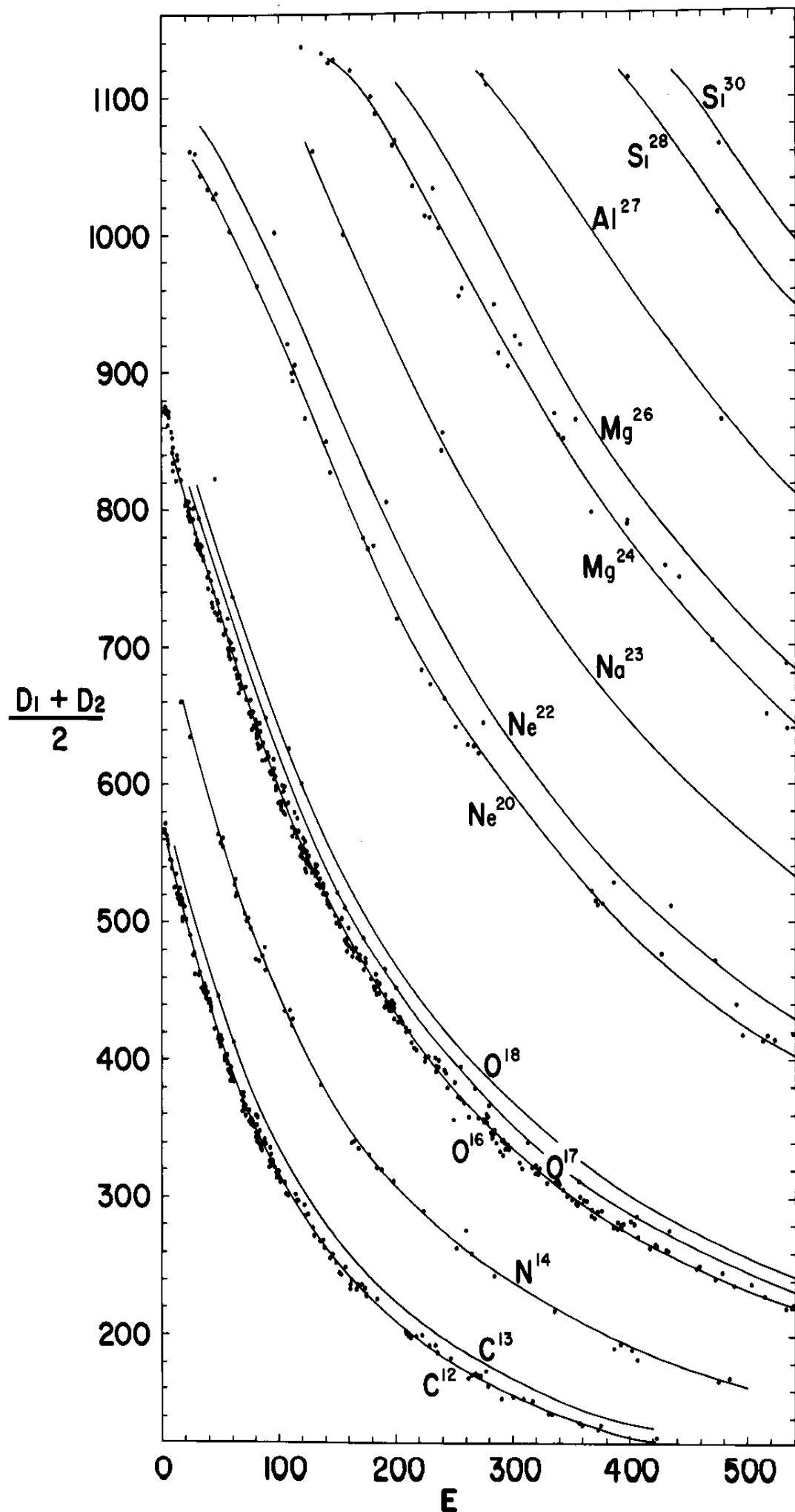


Figure 5.
 dE/dx vs. E
 results from
 the Pioneer
 LET-I tele-
 scope during
 the August
 1972 solar
 event. Clear
 isotopic
 resolution
 for elements
 up to Mg is
 possible.

$\eta_2 \cdot 0^{1/2} A \cdot \frac{1}{\eta_2 - 0.6} |_{30} \eta_2$

DS003737

Job PI-OUT (835) queued to LG01 on 23-JAN-1997 08:48 by user MYERS, UIC [NSSDCOPS, MYERS], under account NSSDCOPS at priority 100, started on printer LTAT: on 23-JAN-1997 08:48 from queue LG01.

HEX DUMP OF P101.m

FILE 1 RECORD 1 7248 BYTES

RECORD 1

FILE

(2200)	C1100000	00480003	00000012	00000000	C1100000	00000000	C1100000	00000000
(2240)	0000000	C1100000	00000000	C1100000	00480003	000D0000	00000000	C1100000
(2320)	C1100000	00000000	C1100000	00000000	C1100000	00000000	C1100000	00000000
(2360)	00480003	000D0000	00000000	C1100000	00000000	C1100000	00000000	C1100000
(2400)	3D13RE8C	00000000	00000000	3E161620	3D5E7B6E	00000001	C1100000	403E0174
(2440)	403962RB	3F1CE418	3D13E64C	3C308DF7	3C8E4105	00000002	000D0012	3F7DFEE3
(2480)	3C8E45F3	00000002	00000002	402A1EDC	3F17CC18	3C8E4105	00480003	3D2C2651
(2520)	000E0006	00000000	00000000	3D9ECD38	3C6E581D	3D15C01F	40208ED7	3D7CC875
(2560)	0000000	00000000	00000000	00480003	000E000C	3DA3IEBA	3CED6631	3D5B296
(2600)	3F117561	3D1614F2	3C32FEEA	3C9CABE6	00480003	000E0012	00000000	00000003
(2640)	00000004	C1100000	40121A61	3EFCT361	3D1A744C	3C3C7789	00000000	00000000
(2680)	00000000	3DA961E8	00100000	3D9E4003	000F0006	00000004	C1100000	3F89A0AB
(2720)	3C95915F	00480003	3C9B4193	3C9R4193	00480003	00000005	3D886B45	3C9B5940
(2760)	3D17D389	3C3675CB	3E922003	3D1ARE35	3C373D78	3D1AA47D	3C89CF0E	3C9B5940
(2800)	C1100000	3F66EBEF	00000003	3D100000	3E7D4AA4	3D181682	3C4E4EA7	3C9B5940
(2840)	00000004	3D983B96	3CCE09F8	00000004	3D919CC3	3D19204E	3CET76380	3F5D625CE
(2880)	00480003	3CFC56422	00100000	00000000	3D9E4003	00000005	C1100000	3FCD6D50
(2920)	3C310642	3D1A46F7	3CFCB2D9	3D241290	3C457B5F	00000006	00000002	3C9B5940
(2960)	3F114FC6	3D1C016A	C1100000	3D57DE52	3E1D4A1B	3D181682	3C447B5A	3C9B5940
(3000)	3CFC9325	00000003	00100012	00000000	3D919CC3	3D19204E	3C4EAA48	3C9B5940
(3040)	00100012	00000000	00480003	00110000	3D9E4003	00110000	3D919CC3	3C9B5940
(3080)	3D15B091	3CFC56422	3D15D833	3D1525ED	3D24A132	3D19204E	3C49D251	3C9B5940
(3120)	3DEF296	3D1C0000	3D12B972	3D12B972	3D12B972	3D12B972	3D12B972	3C9B5940
(3160)	00000005	3DEB564E	00120000	00000000	3D118BDE	00000006	3D118BDE	3C9B5940
(3200)	00000000	3C845F85	00480003	00110012	3D118BDE	00000000	3D118BDE	3C9B5940
(3240)	3D1E4149	3C49D251	3D1EE8C0	3D1EE8C0	3D1EE8C0	3D1EE8C0	3D1EE8C0	3C9B5940
(3280)	3D9355BC	3D9355BC	3D15P86	3D15P86	3D15P86	3D15P86	3D15P86	3C9B5940
(3320)	C1100000	3E3D69B7	3E3D69B7	3E3D69B7	3E3D69B7	3E3D69B7	3E3D69B7	3C9B5940
(3360)	3D476506	00130002	00000004	00000004	3D125035	00000004	00000004	3C9B5940
(3400)	00480003	3D47FF69	00000000	00000000	3D125035	00000001	00000001	3C9B5940
(3440)	3D16D586	3D93A8086	3D16D586	3D16D586	3D16D586	3D16D586	3D16D586	3C9B5940
(3480)	3D93A8086	3D8145FD	3D8145FD	3D8145FD	3D8145FD	3D8145FD	3D8145FD	3C9B5940
(3520)	3D103A23	00000002	00000002	00000002	3D8E7C49	00000006	00000006	3C9B5940
(3560)	00480003	00130006	00000000	00000000	3D9C7F03	00130000	00130000	3C9B5940
(3600)	00000000	3D1043BA	00480003	00130000	3D1043BA	00000000	00000000	3C9B5940
(3640)	3D16946	3C3DC4A5	3D140D7F	3C3DC4E4	3D140D7F	3C3DC4E4	3D140D7F	3C9B5940
(3680)	00000004	C1100000	3E12A564	3E12A564	3E12A564	3E12A564	3E12A564	3C9B5940
(3720)	00000000	3DR156RD	00000005	00000005	3D11573C	00000005	00000005	3C9B5940
(3760)	3CB01274	00480003	00140006	00000000	3D165000	00000000	00000000	3C9B5940
(3800)	3D159CB3	3C375F0D	00000000	00000000	3D165000	00000000	00000000	3C9B5940
(3840)	00000000	3D159A05	3D16946	3D16946	3D16946	3D16946	3D16946	3C9B5940
(3880)	00000000	3DEBABAE	3D134F8A	00000003	3D12A564	00000003	00000003	3C9B5940
(3920)	00480003	00150000	00000000	00000000	3D89748D	00000003	00000003	3C9B5940
(3960)	3C3AED12	3D2D9D93	3D16CED1	00480003	00150006	00000000	00000000	3C9B5940
(4000)	3E1C9555	3E143622	3D1DD538	3C404F4B	3D16CED5	3C3C2345	3D15A583	3C9B5940
(4040)	00000000	C1100000	00000000	00000000	3DBF3A11	00000000	00000000	3C9B5940
(4080)	00150012	00000000	00000000	00000000	C1100000	3D611DR2	3D611DR2	3C9B5940
(4120)	00480003	00150000	00000000	00000000	3D89748D	00000003	00000003	3C9B5940
(4160)	3D80235B	3D18225F	3D16CED1	00480003	00150006	00000000	00000000	3C9B5940
(4200)	00000006	C1100000	3E143622	00000000	3D89748D	00000000	00000000	3C9B5940
(4240)	00150007	C1100000	00000000	00000000	3D1BEDC5	00000000	00000000	3C9B5940
(4280)	00160012	00000000	00000000	00000000	3D125C2D	00000002	00000002	3C9B5940
(4320)	3D1A010C	3D12633E	00480003	00160000	3D89748D	00000003	00000003	3C9B5940
(4360)	C1100000	00000000	00000000	00000000	3D89748D	00000000	00000000	3C9B5940
(4400)	3D9F17E2	3D115D29	00000004	01100000	3D89748D	00000000	00000000	3C9B5940
(4440)	00000000	3DCT7303	00000002	00000000	C1100000	3D89748D	00000000	3C9B5940
(4480)	3CBE7EB1	00480003	00160012	00000000	3D89748D	00000002	00000002	3C9B5940
(4520)	3D21152A	3C42C5D8	3D16233E	00480003	00160000	3D89748D	00000000	3C9B5940
(4560)	00000000	3D18225F	3C394946	00000000	3D89748D	00000000	00000000	3C9B5940
(4600)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(4640)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(4680)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(4720)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(4760)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(4800)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(4840)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(4880)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(4920)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(4960)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(5000)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(5040)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(5080)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(5120)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(5160)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(5200)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(5240)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(5280)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(5320)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(5360)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(5400)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(5440)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(5480)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(5520)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(5560)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(5600)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(5640)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(5680)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(5720)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(5760)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(5800)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(5840)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(5880)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(5920)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(5960)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(6000)	00000000	3D89748D	3D89748D	00000000	3D89748D	00000000	00000000	3C9B5940
(6040)	00000000	3D89748D	3D89748D	00000000	3D89748D</			

FILE 1	RECORD 1936	2960 BYTES	HEX DUMP OF p10in
(0)	0001006C	00000000	D7C9D6D5 C5C5D960
(40)	4040F651	40F461F9	F24040F0 7A40F07A
(80)	40404040	40404040	40404040 40404040
(120)	40404040	40404040	40404040 40404040
(160)	F05D4040	40404040	40404040 40404040
(200)	D9F1F6C4	407E40E2	F14BE2F2 4F45D4B
(240)	40404040	40404040	40404040 40404040
(280)	C4406140	F14EF0FO	F05D4040 40404040
(320)	40404040	40404040	40404040 40404040
(360)	40404040	40404040	40404040 40404040
(400)	40404040	C3407E40	4DD9F1F6 C15D4B5F
(440)	40404040	40404040	40404040 40404040
(480)	5FE2F4D	E2F34040	40404040 40404040
(520)	40404040	40404040	40404040 40404040
(560)	40404040	40404040	40404040 40404040
(600)	407E40E2	F14BE2F2	4F45D4B F05D4040
(640)	40404040	40404040	40404040 40404040
(680)	F14BF0FO	F05D4040	40404040 40404040
(720)	40404040	D9F1F6C3	40404040 40404040
(760)	40404040	407E40E2	40404040 40404040
(800)	005C0006	00040000	40404040 40404040
(840)	005C0006	00040000	40404040 40404040
(880)	005C0006	00050000	40404040 40404040
(920)	005C0006	00050000	40404040 40404040
(960)	005C0006	00050000	40404040 40404040
(1000)	005C0006	00060000	40404040 40404040
(1040)	005C0006	00070000	40404040 40404040
(1080)	005C0006	00070000	40404040 40404040
(1120)	005C0006	00080000	40404040 40404040
(1160)	005C0006	00080000	40404040 40404040
(1200)	005C0006	00090000	40404040 40404040
(1240)	005C0006	00090000	40404040 40404040
(1280)	005C0006	000A0000	40404040 40404040
(1320)	005C0006	000A0000	40404040 40404040
(1360)	005C0006	000B0000	40404040 40404040
(1400)	005C0006	000B0000	40404040 40404040
(1440)	005C0006	000C0000	40404040 40404040

HEX DUMP OF P101n

ELIE Z RECORD 1 0 BYTES

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四

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a

D-58152 73-019A-12C

4/4/73 - 12/31/90
PIONEER 11

INPUT TAPE L12D ON HT1
F9 NF=1 FL=1=1

DUMP OF TAPE L-22B

FILE	1 RECORD	1 LENGTH	7248 BYTES
()	4.05517C	7777777	D7C9D6D5 C5C5D96C
(40)	40404F61	40F261F7	F34040F0 7A40F07A
(80)	40404040	40404040	40404040 40404040
(120)	40404040	40404040	40404040 40404040
(160)	F0C540F0	F240D485	E540D7D9 D6E3D6D5
(200)	40404040	40404040	40404040 40404040
(240)	40404040	40404040	40404040 40404040
(280)	F8C540F0	F1406040	F54BF6F4 F7C540F0
(320)	40404040	40404040	40404040 40404040
(360)	40404040	40404040	40404040 40404040
(400)	40404040	C3407E40	F34BF4F4 F4C540F0
(440)	40404040	D3E4E740	40404040 40404040
(480)	40404040	40404040	40404040 40404040
(520)	40404040	40404040	40404040 40404040
(560)	F240D485	E540C1D3	D7C8C140 404040C6
(600)	40404040	40404040	40404040 40404040
(640)	40404040	40404040	40404040 40404040
(680)	F1406040	F54BF6F7	F6C540F0 F140D485
(720)	40404040	40404040	40404040 40404040
(760)	40404040	40404040	40404040 40404040
(800)	7300404014	730020000	00000000 00000000
(840)	C1100001	730030000	C1100000 00000000
(880)	00000000	C1100000	00000000 00000000
(920)	C1100000	00000000	C1100000 00000000
(960)	00000000	00000000	C1100000 00000000
(1000)	00000000	00000000	C1100000 00000000
(1040)	C1100000	00000000	C1100000 00000000
(1080)	00000000	00000000	C1100000 00000000
(1120)	00000000	00000000	C1100000 00000000
(1160)	C1100000	00000000	C1100000 00000000
(1200)	00000000	00000000	C1100000 00000000
(1240)	C1100000	00000000	C1100000 00000000
(1280)	00000000	00000000	C1100000 00000000
(1320)	00000000	00000000	C1100000 00000000
(1360)	C1100000	00000000	C1100000 00000000
(1400)	00000000	00000000	C1100000 00000000
(1440)	C1100000	00000000	C1100000 00000000
(1480)	00050006	30000000	00000000 00000000
(1520)	00000000	C1100000	00000000 00000000
(1560)	C1100000	00000000	C1100000 00000000
(1600)	00000000	C1100000	00000000 00000000
(1640)	00000000	00000000	C1100000 00000000
(1680)	C1100000	00000000	C1100000 00000000
(1720)	00000000	C1100000	00000000 00000000
(1760)	C1100000	00000000	C1100000 00000000
(1800)	00000000	C1100000	00000000 00000000
(1840)	00000000	C1100000	00000000 00000000
(1880)	C1100000	00000000	C1100000 00000000
(1920)	00000000	C1100000	00000000 00000000
(1960)	C1100000	00000000	C1100000 00000000
(2000)	00000000	C1100000	00000000 00000000
(2040)	00000000	C1100000	00000000 00000000
(2080)	C1100000	00000000	C1100000 00000000
(2120)	00000000	C1100000	00000000 00000000
(2160)	00000000	3D823DEA	3D3189E8 00000000
(2200)	00000000	3D1B78JE	3C3E2789 3D17FAJD
(2240)	00000000	3D1B78JE	3D104F42 00000000
(2280)	3D1915E7	3DD25464	3D1C5E14 3C392EF9

(232,1)	3DA9CB67	3CE1D084	3D1D4BDC	3D1GEA63	00000000	00000000	3D1C0890	3C342422	3D1EBAB	3CB04374
(236,0)	00490004	0090000C	00JJ0010	3DBFF9A33	3CF487FB	3D2DFE2D	3D149192	3E13A137	3DE15D4	3D1918A6
(244,1)	3C32FEE5	3D14D3B5	3CEBA165	00450134	0005012	00000000	3D9E320A	3CE91A52	3D34A8FB	3C178CE0
(248,0)	3CE93B1E	3D32FA09	3D160027	3E234E59	3E11A71C	3D1E1A1A	3C399E62	3CB085A0	3C085A0	00430000
(252,1)	00LA0116	3DCC0U0J0	3DB581CF	3E21EC1	3D167F9	3E218019	3C32BCA3			
(256,1)	3C95B9C2	3C95B9C2	104914	003A410C	00000000	3C863BD4	3CEA5AB4	3D50E3E4	3D1AF6A1	3E165D05
(261,0)	3D0DAD1E	3D19465D	3C31C725	3D105035	3D14EC8E	0045004	00000000	3D0C07F	3D1ADBB89	
(264,0)	3D3A9C89	3D2971CF	00100000	00000000	3D1805CB	3C58DA55	3D1E9082	3D1E9082	00490004	000B0000
(268,1)	00000033	00000000	C110010	00000000	C110000	00000000	C110000	00000000	C110000	00000000
(272,1)	C110003	11450134	10B16	00000000	C110000	00000000	C110000	00000000	C110000	00000000
(276,0)	00000000	C110000	00000000	C110000	00000000	C110000	00000000	C110000	00000000	C110000
(280,1)	C110000	30000000	C110000	00000000	C110000	00000000	C110000	00000000	C110000	00000000
(284,1)	00000030	C110000	00000000	C110000	00000000	C110000	00000000	C110000	00000000	C110000
(288,0)	00450034	00000033	00000000	00000000	C110000	00000000	C110000	00000000	C110000	00000000
(292,0)	C110003	00000000	C110000	00000000	C110000	00000000	C110000	00000000	C110000	00000000
(296,1)	00000000	C110000	00000000	C110000	00000000	C110000	00000000	C110000	00000000	C110000
(300,0)	3D3275C6	3F36FF3D2	3E3E53DC	4145D2BD	492C9456	3D29E0D3	3CBA106D	00000000	00000000	00000000
(304,1)	00000012	00000000	C110000	00000000	C110000	00000000	C110000	00000000	C110000	00000000
(308,0)	3D2B7A73	3D1371B0	00496004	00000000	00000000	3DAE3881	3CF29FA0	3EED013C	3D6G245	4146EF1C
(312,0)	3FEF6061	3D1BB42E	3C384B52	3D303337	3C158E43	30490004	90000006	00000000	3D8FB48	3CD57F64
(316,0)	3F1A238C	3E1C3ED	41EB7E25	4027E7E7	3D16063F	3C842	3D8E842	3C2BAEE	00000000	00000000
(320,0)	00000000	3DAB59C4	3CE88944	3E8ED823	3D96B3B4	41721024	461302B0	3D1270FA	3C2BFC2F	3D42EC9E
(324,1)	3D17A94B	J490004	00000012	00000000	3D8AB5BF	3CDCE461	3E3E7342	3D636CAA	415F512C	40123468
(328,1)	3D16EB33	3C34EDB7	3CAA2E5A	3CAAE25A	00490004	00000000	00000000	3C8438AA	3CFCCB0C	3E30DAD0
(332,0)	3D6D74DD	419CAB65	401CF9D7	3D15C762	3C3EC2B9	3LC1C135F	3D1130A3D	0049004	100E0006	00000000
(336,0)	3C95F1F	3C55F1F	10491074	00000000	3C9F35AB	3CDCE5C3	3C4047E	3D188CFA	40079917	
(340,1)	3D986792	3CE14420	3DFC20EE	3D31724D	4128B83A	3F78D810	3D152B0C	3D2E37A9	3D1719D4	
(344,1)	00000000	3D93D924	3D9B341C	3C3D9306F	3D933024	40E38BFA	3F386133	3D3C3D5		
(348,0)	408A65F	3F2B495C	3D129DA8	3C2B7247	3D13CED4	3CE02533	00490004	00000000	00000000	3DBD50A3
(352,0)	3CD11759	3D6DF375	3D1F8D78	40965943	3F2C7AAA	3CF0181	3C28D568	3D2683FA	3D1341FD	00490004
(356,0)	00000016	J0000000	3D8E85CA	3C5F74B	3E1CAFEB	40946936	3F2E0531	3D16C823	3C3047C4	
(360,0)	3C95F1F	3C55F1F	10491074	00000000	3C9F35AB	3CDCE5C3	3C4047E	3D188CFA	40079917	
(364,0)	3F25B039	3D14897A	3C2E031A	3C9A1FA8	00490004	00000012	00000000	3D95A782	3CD3A5E3	
(368,0)	3D26C6DC	3D13636E	405399A7	3F1FB448	3D15A214	3C2EAC11	3C82D18C	3C82D18C	00490004	00100000
(372,1)	3D1AAB20	3CE6111	3D38322D	3C16F121	40EB6A3C	3F1A7FB2	3D1F2D79	3C2B8C65	4029B935	3F1791BF
(376,0)	00000000	3D490004	00000000	3D9F0000	00000000	3D87E9017	3D1031F5	3D38A3D2	3D195484	
(380,0)	3D159498	3C5049B	3C5A1D0	3D1932D	3C351B22	3E1CEE39	3D10E3FC	00490004	00100012	00000000
(384,1)	3D17851A	4J38575	3F31A0AB	3D1A2283	3C351B22	3E1CEE39	3D10E3FC	00490004	00100012	00000000
(388,1)	3D84A9397	3D1523BC	3D43DA5F	3D21ED2F	4068B78	3F3337E57	3D1B7A3	3C4CBDE1	3D40FF0A	3D25868D
(392,0)	00490004	00110000	00000000	3DB8E6DA	3D10F1C7	3D23C30F	3D14A5AC	409A3761	3F33C70F	3D195B1F
(396,0)	3C373546	3CA5DE3E	00490004	00110006	00000000	3D87E9017	3D1031F5	3D38A3D2	3D195484	
(400,0)	3D17851A	4J38575	3F31A0AB	3D1A2283	3C351B22	3E1CEE39	3D10E3FC	00490004	00100012	00000000
(404,0)	3D1098BC	3D162CDE	40ED0018	3F25539	3C1C5C2F	3C81B5AD	3C81B5AD	3C81B5AD	3C81B5AD	3C81B5AD
(408,0)	00110012	00000000	3D9B408B	3CE3A886	3D295C7A	3D14AE3D	40A55FC9	3F33091A	3D1B48F4	3C34F0CC
(412,1)	3D141DA7	3CE395AE	J0494004	00120000	00000000	3DAEA4FC	3CF434D2	3D3109CE	3D15EE3B	4096A861
(416,0)	3F2E5B31	3D15278B	3C354F03	3D26171B	3D1308D	00490004	00120006	00000000	3D0AF26A4	3CFBA01D
(420,0)	3D15E7E4	3CF7D63E	40AD835F	3F35FB36	3D10B8AD	3C364D8	3CA3D551	3CA3D551	00490004	00120000
(424,0)	00000000	J0490004	00120012	00000000	3D9881B	3CE13E66	3C13E66	3D1B821A	3F2A8058	
(428,0)	3C888DC	3D1EB21	3C316421	3D130342	3CE94C04	10490004	00130000	00000000	3CAF14C4	3CF6C37C
(432,0)	3C4888E9	406DABC3	3F278F43	3D19B234	3C35FC2A	3CE9E9AAC	3C9E9AAC	00490004	00130006	00000000
(436,0)	3D9C488E9	3D15E56	405DB348	3F2773EB	3D1C5481	3C3F78DC	3CDBEAFE	3CDBEAFE	3CDBEAFE	
(440,1)	00450014	J0130000	3C450014	3D517515	3CE4FEE0	3D1C5B25A	4052E25A	3E21BE03	4042C84J3	
(444,0)	3C9BD556	3C9BD556	3C9BD556	3D450004	00130012	00000000	3D48A66	3CF4D081	3C3B267	3CA3B267
(448,0)	3C55A8B	3C55A8B	3C55A8B	3C55A8B	00130012	00000000	3D48A66	3CF4D081	3C3B267	3CA3B267
(452,0)	403B2FF0	3F1BC4D5	3D1968E6	3C356540E	3CA2BF6	3CA2BF6	00490004	00140000	00000000	3D236001
(456,1)	3CE42116	3D207702	3D12BED4	40350E8B	3F1BF94F	3D1CF36E	3C397465	3D2865AC	3D1432D6	00490004
(460,1)	00000000	J0130000	3D9A6E64	3CFE5D81	3D17045D	3D1D959C	40364EE6	3F1CA5D7	3D19442A	3C3A4F77B
(464,0)	3CC4D07	3C004D7	00490004	00000000	3D9C354A	3D10807	4052E25A	3E21BE03	4042C84J3	
(468,0)	3D191A04	3F191C	10490004	00000000	3D9C354A	3D10807	4052E25A	3E21BE03	4042C84J3	
(472,1)	3D44C03C	3D19FC43	401BD727	3F128735	3D19C679	3C35B0C4	3D154AE8	3CF0E5FB	00490004	00150000
(476,0)	00000000	3D5A9FF6	3CEAD2E7	3D836E45	3C25FD7	45154555	3F10A152	3D1598RC	3C32E2AD	3D1FC1AD
(480,0)	3D1255AB	00490004	00150006	00000000	3DA43F2A	3CF54A83	3D30D05A	3D193C43	40183E50	3F110814
(484,0)	3D1CA9JF	3C3A3CEA	3D281778	3D14839F	3CE3A94F3	00490004	00000000	3D5A1576	3C37E6FA	3D303C96
(488,1)	3D15D16B	4111491F	3E335A8F	3D1839D	3C32F4F3	3C1EB04D	3CF0E5FB	00490004	00150012	3D1000000
(492,0)	3D9C49E	3CE94E2C	3C5A5A4B3	4012ED6C	3EFT7E9D5	3D19C679	3C36B1A6	3D1DBC9C	3D112810	

FILE	INPUT	DATA RECORDS	MAX.	READ ERROR SUMMARY	INPUT RETRIES				
RECS*	INPUT	SIZE	PERM	ZERC B	SHCRT	UNDEF.	#RECS.	TOTAL#	
1	1696	1697	7248	1	1	1	0	3	
(240)	40440431	40404040	40404040	40434346	40404043	40404040	40404040	C2407E40	40D9F1F5
(281)	C446143	F14BF2F1	F0C540F0	F05D4143	40404043	40404040	40404040	40404040	40404040
(321)	4544543	41414143	43443441	C9F1F5C4	407E40E2	F14CF45D	4B5FE2F2	4DC15D4B	5FE2F340
(360)	4144343	43404043	43443433	40404040	40404040	40404040	40404040	40404040	40404040
(400)	4344046	C340F1F6	40D9F1F6	C1406166	40404040	F0C540F0	F05D4040	40404040	40404040
(440)	4644041	41414141	43404040	40404040	40404040	40404040	40404040	40404040	40404040
(481)	5FE2F240	C15D4B5F	E2F34140	40404040	40404040	40404040	40404040	40404040	40404040
(520)	40434345	41414140	43434343	40404043	C4407E40	4DD9F1F6	C2406143	F14BF2F0	F0C540F0
(560)	40440430	41414140	43434340	40404040	40404040	40404040	40404040	40404040	40404040
(600)	41544542	F14BE2F2	40D9F1F6	C15D4B5F	E2F34040	40404040	40404040	40404040	D9F1F6C2
(640)	41414142	40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040
(680)	F14BF0FU	F0C540F0	F05D4040	40404040	40404040	40404040	40404040	40404040	40404040
(721)	40443441	41414141	43404040	D9F1F6C3	407E40E2	F14BE2F2	4DF35D4B	SFE2F240	C15D4B5F
(760)	41414141	41414141	43404040	40404040	40404040	40404040	40404040	E2F34040	40404040
(800)	005A003C	00080030	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(840)	005A000C	00090000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(880)	005A003C	A005003C	J01000000	J00000000	C11000000	005A000C	00090000	00000000	00000000
(920)	005A000C	00090000	00000000	00000000	C11000000	005A000C	00090000	00000000	00000000
(960)	005A000C	00000000	00000000	00000000	C11000000	005A000C	00000000	00000000	00000000
(100)	005A003C	00000000	00000000	00000000	C11000000	005A000C	00000000	00000000	00000000
(104)	005A003C	J00000000	00000000	00000000	C11000000	005A000C	00000000	00000000	00000000
(108)	005A003C	00000000	00000000	00000000	C11000000	005A000C	00000000	00000000	00000000
(1120)	005A000C	00000000	00000000	00000000	C11000000	005A000C	00000000	00000000	00000000
(1160)	005A000C	J00000000	00000000	00000000	C11000000	005A000C	00000000	00000000	00000000
(1200)	005A003C	J00000000	00000000	00000000	C11000000	005A000C	00000000	00000000	00000000
(1240)	005A003C	00000000	00000000	00000000	C11000000	005A000C	00000000	00000000	00000000
(1280)	005A000C	00000000	00000000	00000000	C11000000	005A000C	00000000	00000000	00000000
(1320)	005A000C	J00000000	00000000	00000000	C11000000	005A000C	00000000	00000000	00000000
(1360)	005A003C	J00000000	00000000	00000000	C11000000	005A000C	00000000	00000000	00000000
(1400)	005A000C	00000000	00000000	00000000	C11000000	005A000C	00000000	00000000	00000000
(1440)	005A001C	J01000000	00000000	00000000	C11000000	005A000C	00000000	00000000	C11000000
(1480)	005A000C	J01000000	00000000	00000000	C11000000	005A000C	J01000000	00000000	C11000000
(1520)	005A003C	00110000	00000000	00000000	C11000000	005A000C	00110000	00000000	C11000000
(1560)	005A000C	00110000	00000000	00000000	C11000000	005A000C	00110000	00000000	C11000000
(1600)	005A000C	00120000	00000000	00000000	C11000000	005A000C	00120000	00000000	C11000000
(1640)	005A000C	J01200000	00000000	00000000	C11000000	005A000C	00120000	00000000	C11000000
(1680)	005A003C	J01300000	00000000	00000000	C11000000	005A000C	00130000	00000000	C11000000
(1720)	005A000C	00130000	00000000	00000000	C11000000	005A000C	00130002	00000000	C11000000
(1760)	005A003C	J01400000	00000000	00000000	C11000000	005A000C	00140000	00000000	C11000000
(1800)	005A000C	00150000	00000000	00000000	C11000000	005A000C	00150006	00000000	C11000000
(1840)	005A000C	00150000	00000000	00000000	C11000000	005A000C	00150006	00000000	C11000000
(1880)	005A003C	J01600000	00000000	00000000	C11000000	005A000C	00150012	00000000	C11000000
(1920)	005A003C	J01600000	00000000	00000000	C11000000	005A000C	00160006	00000000	C11000000
(1960)	005A000C	J01600000	00000000	00000000	C11000000	005A000C	00160012	00000000	C11000000
(2000)	005A000C	00170000	00000000	00000000	C11000000	005A000C	00170006	00000000	C11000000
(2040)	005A000C	00170000	00000000	00000000	C11000000	005A000C	00170012	00000000	C11000000
(2080)	005A000C	J01800000	00000000	00000000	C11000000	005A000C	00180012	00000000	C11000000
(2120)	005A000C	00180000	00000000	00000000	C11000000	005A000C	00180012	00000000	C11000000
(2160)	005A000C	J01900000	00000000	00000000	C11000000	005A000C	00190006	00000000	C11000000
(2200)	005A003C	J01900000	00000000	00000000	C11000000	005A000C	00190012	00000000	C11000000
(2240)	005A003C	J01A00000	00000000	00000000	C11000000	005A000C	00190012	00000000	C11000000
(2280)	005A000C	J01A00000	00000000	00000000	C11000000	005A000C	001A0012	00000000	C11000000
(2320)	005A000C	J01B00000	00000000	00000000	C11000000	005A000C	001B0006	00000000	C11000000
(2360)	005A003C	J01B00000	00000000	00000000	C11000000	005A000C	001B0006	00000000	C11000000
(2400)	005A003C	J01C00000	00000000	00000000	C11000000	005A000C	001C0006	00000000	C11000000
(2440)	005A000C	001C0000	00000000	00000000	C11000000	005A000C	001C0012	00000000	C11000000
(2480)	005A000C	J01D00000	00000000	00000000	C11000000	005A000C	001D0006	00000000	C11000000
(2520)	005A000C	J01D00000	00000000	00000000	C11000000	005A000C	001D0012	00000000	C11000000
(2560)	005A000C	001E0000	00000000	00000000	C11000000	005A000C	001E0006	00000000	C11000000
(2600)	005A000C	J01E00000	00000000	00000000	C11000000	005A000C	001E0012	00000000	C11000000
(2640)	005A000C	J01F00000	00000000	00000000	C11000000	005A000C	001F0006	00000000	C11000000
(2680)	005A000C	J01F00000	00000000	00000000	C11000000	005A000C	001F0012	00000000	C11000000

E0J

DUMP STOPPED AFTER FILE 1

OF PERMANENT READ ERRORS 0

START TIME 04/04/91 19:37:27 STOP TIME 04/04/91 19:38:18

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